



Innovative Manufacturing CRC Ltd

(ABN 24607527499)

IMCRC activate funding program Application and Selection Guidelines

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Australian Government
Department of Industry, Science,
Energy and Resources

Business
Cooperative Research
Centres Program

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IMCRC ‘activate’ Project Application and Selection Guidelines

1. Objectives of the IMCRC

The IMCRC has a mission to catalyse the **transformation of Australian manufacturing** through **collaborative investment, research impact** and **innovation**. The IMCRC is led by industry to develop innovative new products, processes and services in Australia’s manufacturing sector. It operates in the context of the Australian Government’s Cooperative Research Centre (CRC) program to improve the competitiveness, productivity and sustainability of Australian manufacturing businesses, and to drive digital and business model transformation. The IMCRC delivers outcomes in line with Commonwealth priorities in key growth sectors and in science, research and innovation, encourages and enables small and medium enterprise (SME) participation in collaborative research, and funds projects to tackle industry specific problems through research partnerships between industry entities and research organisations.

IMCRC in 2017 commenced funding for a wide range of industry-led manufacturing R&D projects, and has invested \$30m of Commonwealth funding to catalyse around \$200m of manufacturing research and development. More information on IMCRC projects is at www.imcrc.org/projects

2. IMCRC ‘activate’ collaborative manufacturing R&D project funding opportunity

In response to the economic and other challenges driven by COVID-19 and the need to rapidly accelerate the uptake of innovation, collaboration, research, adoption of new technologies and business models, and the creation of jobs, IMCRC has created a new ‘activate’ funding program designed to stimulate and incentivise investment in Australian manufacturing research and development, particularly with small and medium sized businesses (SMEs).

This program is designed to provide opportunities for Australian businesses, in particular SME manufacturers across all industry sectors, to invest in shorter and faster projects with Australian research organisations, and with reduced barriers and financial commitment. Collaborative projects are welcomed that can be completed within a 6 to 12 month period and that invest in new innovative manufacturing technologies and business models, including Industry 4.0. Projects are encouraged that also deliver outcomes aligned with Australian national / sovereign priorities, including COVID-19, and projects that deliver environmental and sustainability outcomes.

3. Summary of the IMCRC ‘activate’ project and funding opportunity

The following provides a summary of the ‘activate’ project funding opportunity, including criteria.

Criteria	Requirement
Valuation	<p>For eligible project expenditure, IMCRC matches industry cash contributions on a dollar for dollar basis (ie IMCRC co-funds up to 50% of the total cash value of the project).</p> <p>Research organisations are not required to contribute cash (already Essential Participants in IMCRC).</p>
Eligible applicants (industry participant)	Australian registered business/manufacturers, with particular focus on supporting small and medium businesses.

Eligible partner research organisations – projects must be undertaken with one or more of these	<p>IMCRC partner research organisations (Essential Participants in IMCRC), which include:</p> <ul style="list-style-type: none"> • CSIRO • Royal Melbourne Institute of Technology (RMIT) • Swinburne University of Technology (SUT) • Deakin University • University of South Australia • Flinders University • University of Technology Sydney (UTS) • University of Sydney • Queensland University of Technology (QUT) • Griffith University
Manufacturing Readiness Level (MRL) eligible project range	<p>MRL 2-10 (project to move up at least 1 MRL Level, ideally 2).</p> <p>Refer Appendix B to these Guidelines for MRL table and descriptions.</p>
Commercialisation / implementation timeframe	<p>As early as practical, and ideally within 1 year from the end of the project (or continue to invest in next MRL steps)</p>
Project topics	<p>Key enabling manufacturing and Industry 4.0 technologies, including:</p> <ul style="list-style-type: none"> • Additive Manufacturing (3D printing) • Advanced materials • Sensors and data analytics • Robotics, assistive and automated technologies • Virtual, augmented and mixed reality • Machine learning and Artificial Intelligence (AI) • High value product development • Digital business models • Sustainable manufacturing and supply chains
Additional merit considered	<ul style="list-style-type: none"> • Projects that deliver outcomes aligned with Australian national / sovereign priorities, including COVID-19. • Projects that deliver environmental and sustainability outcomes.
Project (new) Intellectual Property	<p>Owned by the Industry lead participant (unless otherwise agreed), noting IMCRC takes no ownership in new Project IP created.</p>
Eligible project expenditure	<p>The cost of research organisation project expenditure, including researcher salaries and operating costs. Refer table below.</p>
Ineligible expenditure	<p>Refer table below, however all Industry participant project expenses are ineligible for IMCRC matched cash funding – ie IMCRC only provides funding for costs incurred at eligible partner research organisations and not for project costs incurred by the industry participants. Industry costs are valued as in-kind contributions.</p>
IMCRC matching cash contribution	<p>\$50,000 - \$100,000 per project, up to a maximum of \$150,000 where a strong fit to IMCRC criteria.</p>

Project term	Ideally between 6-12 months, up to a maximum 15 months.
In-kind contribution	IMCRC requires in-kind contributions to be determined and valued by the project parties, and typically the total project in-kind (staff in-kind and other in-kind) to be in the order of 3 x the value of IMCRC matching cash contribution.
Cost of research organisation staff	\$ actual salary +35% on costs, capped at ≤ 2x base salaries.
Operational expenses (opex) cap	Maximum 33% of total project cash cost.

4. Applying for project funding assistance

- Registered Australian businesses may be eligible to receive IMCRC project funding. Project applicants must meet IMCRC's evaluation criteria and be approved by IMCRC.
- All recipients of IMCRC project funding will be required to enter into a contractual agreement with IMCRC and the project parties that defines the terms and conditions by which funding will be provided, and be required to comply with the terms of the project funding agreement.
- IMCRC funds cannot be used to fund costs already covered by funding from other government sources (Federal, State or Territory).
- Once a formal and compliant project application has been received by IMCRC (together with supporting documentation including financial budget) it will normally be processed within 15 days, unless it is necessary for IMCRC to seek further information to support the application.
- Applications may be submitted to IMCRC at any stage, and are not subject to the timing of funding rounds.
- IMCRC funding is subject to continuity and availability of funding to the IMCRC from the Commonwealth.

5. Operating Principles and Funding Guidelines for IMCRC 'activate' Projects

- The management framework and budget structures for the IMCRC 'activate' projects are summarised in a set of key operating principles, as set out below. The following principles are derived from the provisions of the IMCRC Commonwealth Agreement, Participants Agreement and other IMCRC governance and business processes:
 - 5..1. Industry participants define the problem which will enable the research participants to devise a collaborative research plan and budget that will deliver an effective solution and appropriate outcomes within a project term of 6 – 12 months.
 - 5..2. Project funding criteria and guidelines
 - IMCRC welcomes 'activate' project applications that are ideally in the range of \$50,000 to \$100,000 total cash contribution from Industry and eligible for matching with IMCRC cash contributions. By exception projects may be considered up to a maximum of \$150,000 per project, where these projects have a strong fit to the IMCRC strategy and project selection criteria.
 - The term of the IMCRC 'activate project should ideally be 6-12 months, and up to a maximum of 15 months (noting that any project needs to be completed by 30 June 2022).
 - Industry participants are required to work with one of IMCRC's partner research organisations (Essential Participants in IMCRC), which include:
 - CSIRO
 - Royal Melbourne Institute of Technology (RMIT)

- Swinburne University of Technology (SUT)
- Deakin University
- University of South Australia
- Flinders University
- University of Technology Sydney (UTS)
- University of Sydney
- Queensland University of Technology (QUT)
- Griffith University
- Any funding is subject to sufficient funding being made available to the IMCRC by the Commonwealth, together with a successfully executed Project Agreement with the relevant Project participants. No funding is intended to be provided for costs incurred prior to the commencement date as defined in the Project Agreement, unless specifically agreed.
- As detailed in the Commonwealth Agreement (section 10.2), the IMCRC funding is not to be used or spent:
 - a) *for Activities other than the Commonwealth Funded Activities;*
 - b) *for capital works or for the purchase, construction, renovation or extension of buildings or facilities;*
 - c) *for any activities for which the CRC has previously been funded, or is currently being funded by the Australian Government or a State or Territory government either directly or indirectly through any other funding scheme;*
 - d) *to reimburse an Essential Participant or Other Participant for In-Kind Contributions;*
 - e) *to pay an Essential Participant or Other Participant for the indirect costs of research in relation to CRC Programme funded staff located in their organisation;*
or
 - f) *for the indirect support costs of research conducted overseas.*
- IMCRC will not provide any funding for Industry participant research costs, which means that all Industry participant research and other costs are effectively valued as in-kind contributions and are not matched by IMCRC cash funding.
- IMCRC will provide matched Industry participant funding for Research Organisation costs where these are directly related and relevant to the research project.
- Note that total operating costs cannot exceed 1/3 of the total Project Budget.
- Eligible research costs are summarised in the table below:

Research Organisation Expenditure Description	Eligible for IMCRC cash matching?
Cost of employee salaries plus up to 35% on costs (to allow for superannuation and other employment costs, including internships, where directly related and relevant to research project(s) and undertaking research activities). Subject to agreement, a maximum of 65% for facility investment recovery costs, which requires detail and justification from the Research Organisation. The total maximum on-cost is therefore an additional 100% to the base salary, and the employed staff must be paid through the research organisation's payroll.	Yes
Operating costs including for example the cost for consumables, materials, prototypes, prototype tooling, software licenses, rental or hire of dedicated tools or systems, energy and utilities.	Yes
Operating and 'out of pocket' costs for directly related and relevant Project Management	Yes
Operating and 'out of pocket' costs for directly related and relevant travel, marketing, communications, etc	Yes

Costs for initial intellectual property protection and utilisation / commercialisation planning	No Only considered as Other In-Kind
Cost for buildings and facilities, or any purchase cost of capital equipment or production tooling	No Only considered as Other In-Kind
Costs for Management / Senior staff / Key Researcher who are directly employed by the Research Organisation involvement in Project	No Only considered as Staff In-Kind

- The IMCRC Executive maintains oversight of the delivery of agreed milestones across the whole investment portfolio. Research projects are carried out under the terms of individual Project Agreements.
- New Project Intellectual Property (IP) will be owned by the Industry Lead Participant, unless otherwise specifically agreed.
- Each project has an accountable Project Leader (researcher) and a managing customer (industry). The key accountability of the industry participants is the definition and execution of the overall Project plan, and overall responsibility for the management and outcomes of the project.
- All projects are structured around a series of defined milestones - which where possible are aligned with Manufacturing Readiness Levels (MRLs, refer **APPENDIX B** to these Guidelines), and research organisations are paid upon acceptance of a report verifying completion of milestones. Quarterly progress reports must be signed off by the Project Leader, Chair of the Project Management Committee (who is an industry representative) and IMCRC Executive.
- IMCRC project funds will enable Industry and research participants to co-invest in highly valued and collaborative partnerships, where identified gaps exist, that both strengthen Australia's manufacturing capabilities, positively impact SMEs, create jobs, and importantly deliver marketable outcomes and enable access to global supply chains.
- Industry project participants are invoiced on a monthly basis and must pay IMCRC monthly in advance of costs being incurred for agreed and budgeted research activities (ie payment must be received by IMCRC 7 days before the month end sufficient for the following month's agreed cost of research).
- Research organisations are paid quarterly in arrears, in line with terms of the Project Agreement (including approval of the quarterly report).

6. Purpose of the Project Plan

- To initiate the project selection process, a Project Plan application must be completed and submitted by the lead Industry participant using the template which accompanies these guidelines. The template comprises sections requiring information consistent with details that are set out in the Project Agreement and aligned with the IMCRC Project criteria.
- In summary, the Project Plan must clearly articulate industry demand for the project outcomes, technology readiness of the project, how the project will contribute to the additional goals of knowledge diffusion, business innovation and/or industrial transformation, and provide sound justification for the investment based on the estimated costs to deliver tangible benefits to the industry participant, and ideally also to other SMEs, the wider manufacturing industry, and the wider economy.
- The Project Plan also needs to outline how the activities are underpinned by a clear Project management and implementation strategy which will be overseen by a Project Management Committee.

7. What the Project Plan should contain

- The Project Plan application template contains the following sections:
 1. Project Details

2. Industry Lead Details
 3. Proposed IMCRC Research Organisation Partner(s)
 4. Other Proposed Project Partners (if applicable, eg other industry partners)
 5. Summary Financial Details
 6. Project Proposal
 7. Project Timing (Milestone, GANTT chart)
 8. Risk Analysis
 9. Project Management and Governance
 10. Other Sources of Government funding
 11. Additional Financial Information for the Industry Lead Participant
 12. Checklist for All Participants
- The budget tables will need to be completed in a separate Excel template spreadsheet, as provided by IMCRC.
 - A senior officer of the lead industry organisation must authorise the Project Plan prior to its submission to IMCRC. An authorised officer would typically be a company CEO for example.

8. Project Selection Criteria

- Each Project Plan will be assessed against defined selection criteria which are set out in **APPENDIX A** to these Guidelines.
- The IMCRC will only consider industry-led projects with Manufacturing Readiness Levels (MRLs) starting from MRL 2, and evidencing how the MRL level can be matured by at least one and ideally more MRLs by project completion. For guidance, the definitions of MRLs used by the IMCRC for 'activate' Projects are outlined in **Appendix B** to these Guidelines.
- Submitted Project Plans that do not meet sufficient selection criteria will be rejected, or returned by the IMCRC for revision prior to assessment by the IMCRC Executive.
- Following a review of all Project Plans by the IMCRC Executive, IMCRC Management will prepare a report for the IMCRC CEO with recommendations regarding funding support.
- The IMCRC Executive will assess Project Plan submissions on a scoring basis against the IMCRC criteria. Based on the score and fit to the IMCRC criteria, the completeness of the submission, the level of funding and other considerations as the IMCRC Executive deems relevant, the IMCRC Executive will determine how the application will proceed.
- Further details of the project selection, management and reporting processes which will be used are set out in **APPENDIX C** to these Guidelines.
- The IMCRC CEO has delegated authority from the IMCRC Board to review and approve 'activate' Projects.

9. Project Management Roles and Structure

- The Project Management Committee (PMC) for the project will be responsible for project governance at the researcher and project team level, and will monitor the research progress against timelines and budgets.
- 9..1. The PMC will typically consist of:
 - a Chair who is an industry representative, not a research participant;
 - the Project Leader who is a research organisation representative;
 - a member of the research team as determined by the Project Leader;
 - a representative of each Project Agreement organisation (including the IMCRC);
 - and
 - other relevant stakeholders and end users as requested by the IMCRC Executive.
 - 9..2. PMC meetings are to be held at least quarterly either in person or via teleconference or video call, and can be rolled into the research organisation's weekly meeting.
 - 9..3. The IMCRC CEO can convene a meeting of a PMC at any time for the purposes of obtaining a report and to confirm the status of the project.

- The Project Leader will be responsible for the day to day project management within the research organisation. The Project Leader is expected to be the project champion by leading the project team and communicating with all participants frequently, clearly and consistently. The Project Leader will work collaboratively with the PMC and report to the IMCRC through the IMCRC Manufacturing Innovation Manager (MIM) or nominee (eg Project Research Officer).
- In addition to participating in the PMC, the IMCRC Manufacturing Innovation Manager (MIM) and Project Research Officers will administrate the project in alignment with the Project Management Guidelines, including the provision and maintenance of the IMCRC Salesforce platform used for Project tracking and reporting. This will include reviewing all reporting, tracking of milestones and issues/risk registers, reporting as required to the Commonwealth, and coordination of PMC meetings.
- The structure for project management, including schedules for reporting, reporting tools and responsibilities of the project teams and leaders is detailed in the IMCRC Project Management Guidelines document. This document is available upon request from IMCRC, and is shared with participants once a Project Plan application has been approved by IMCRC and work commences on the formal Project Agreement.
- Project reporting will be done by the Project Participants using IMCRC's cloud-based Salesforce platform. IMCRC will provide login credentials and other instructions regarding the use of this platform.

10. Project Agreement

- Project Participants will be required to enter into a formal and legally binding Project Agreement with IMCRC. The agreement will cover items such as payment schedules, project management and risk management requirements, IP ownership, performance monitoring, reporting format, auditing requirements including record keeping, insurances and indemnities, and will include the (non-negotiable) General Terms and Conditions.
- Several schedules will be included within or appended to the Project Agreement including:
 - Commencement Date
 - Special terms (if any)
 - Final Reporting Date
 - Insurance Obligations
 - Project Management Committee terms of reference
 - Intellectual Property arrangements
 - Project Plan (project outcomes, milestones, budget, risk management strategy, etc)
 - Milestones and reporting format
 - Financial reporting format
 - Template Collaboration Agreement (if applicable)

APPENDIX A

IMCRC 'activate' Project selection criteria

- Applicants are required to answer the following sections and questions (refer separate application template provided by IMCRC, carefully ensuring answers are a good fit to the questions and criteria.
- IMCRC reserves the right to request further and additional information in order to consider any application.

Why, what and how	
1. Problem description	What is the problem / gap / opportunity that this manufacturing R&D project is intending to solve / fill / create?
2. Project outcome(s)	What will be the primary manufacturing outcome(s) of this project, and how will it solve the problem / fill the gap / create the opportunity?
3. Project R&D plan and activities	What Manufacturing Readiness Levels (MRLs) will this project progress through (start MRL and end MRL)? Refer Appendix B of these Guidelines for MRL Table and descriptions
	What type of advanced technologies or innovative approaches will be adopted or created? What is unique about the project?
	What plans will be implemented to encourage effective collaboration between project partners (eg co-location), and also including with other small and medium businesses?

Project benefits	
4. Benefit to, and impact on, industry participant(s)	What significant benefits (eg value, uniqueness, competitive advantage, upskilling, new business model, further investment, etc) will this project bring to the industry participant(s)?
5. Strategic opportunity	What are the benefits of this project for others, eg for other businesses, supply chains, research organisations?
	What is the anticipated return on investment for the project (eg sales revenue, exports, jobs, growth, other revenue sources related to project-related commercial transactions and IP utilisation, etc)?
	What evidence can the industry participant(s) provide that this research project is a strategic priority within their organisation and will be championed accordingly (e.g. leadership buy-in, finances, resources, project management)?

Markets and competition	
6. Pathway to market	What is the opportunity this project enables to create new products and/or services, including accessing new markets, and what is the size/scale of the market opportunity?
	What are the barriers to entry to the target markets, and how can these barriers be overcome, including through this project?
	What opportunities are there to access global markets (eg exporting products and/or services)?
Confidentiality and Intellectual Property (IP)	
7. Background IP	What background IP exists (if any) that is relevant to the research and is subject to usage restrictions (if so, please describe)? What confidential information (if any) is applicable to the project?
8. Project IP and availability	New Project IP is to be owned by the Industry Lead participant, unless otherwise specifically agreed. What arrangements have been agreed between the proposed project participants regarding ownership and utilisation of Project IP created (if any)?

APPENDIX B

Definitions of Manufacturing Readiness Levels (MRLs)

Manufacturing Readiness Level (MRL) is a measure developed by the United States Department of Defense (DOD) to assess the maturity of manufacturing readiness, similar to how Technology Readiness Levels (TRL) are used for technology readiness. The intent was to create a measurement scale that would serve the same purpose for manufacturing readiness as TRLs serve for technology readiness – to provide a common metric and vocabulary for assessing and discussing manufacturing maturity, risk and readiness. They can be used in general industry assessments, or for more specific applications in assessing capabilities of organisations, possible suppliers, etc.

MRLs are quantitative measures used to assess the maturity of a given technology, component or system from a manufacturing perspective. They are used to provide decision makers at all levels with a common understanding of the relative maturity and potential risks associated with manufacturing technologies, products, and processes being considered. Manufacturing risk identification and management should begin at the earliest stages of technology development, and continue vigorously throughout each stage of a program's life-cycles.

MRLs were designed with a numbering system to be roughly congruent with comparable levels of TRLs for synergy and ease of understanding and use

MRLs provide a common language and standard, for example, in:

- Assessing the manufacturing maturity of a technology, product, or manufacturing process
- Understanding the level of manufacturing risk to produce a system or transitioning a technology into a system
- Integration of manufacturing into the acquisition process and milestone decisions
- Establishing the agenda for manufacturing risk management within existing Systems Engineering processes and technical reviews
- Achieving manufacturing maturity at critical acquisition decision points
- Pinpointing potential risk areas through independent Manufacturing Readiness Assessments (MRAs)

Manufacturing Readiness Assessments (MRAs) address these unanswered questions in order to reduce manufacturing risk. However, it still does not address the question of whether the product is reliable or maintainable.

The IMCRC sees particular benefit in the use by participants of TRL and MRL terminology and milestones in Project Plans, including:

- Common language and measurement across different projects
- Articulation of key IMCRC focus areas for both Research Projects and Business and Industry Transformation Projects
- Creating and managing IP Utilisation Plans, outcome planning and measurement, Project reporting, etc.

MANUFACTURING READINESS LEVELS – IMCRC ‘activate’ PROJECT FOCUS IS MRL2 - MRL10

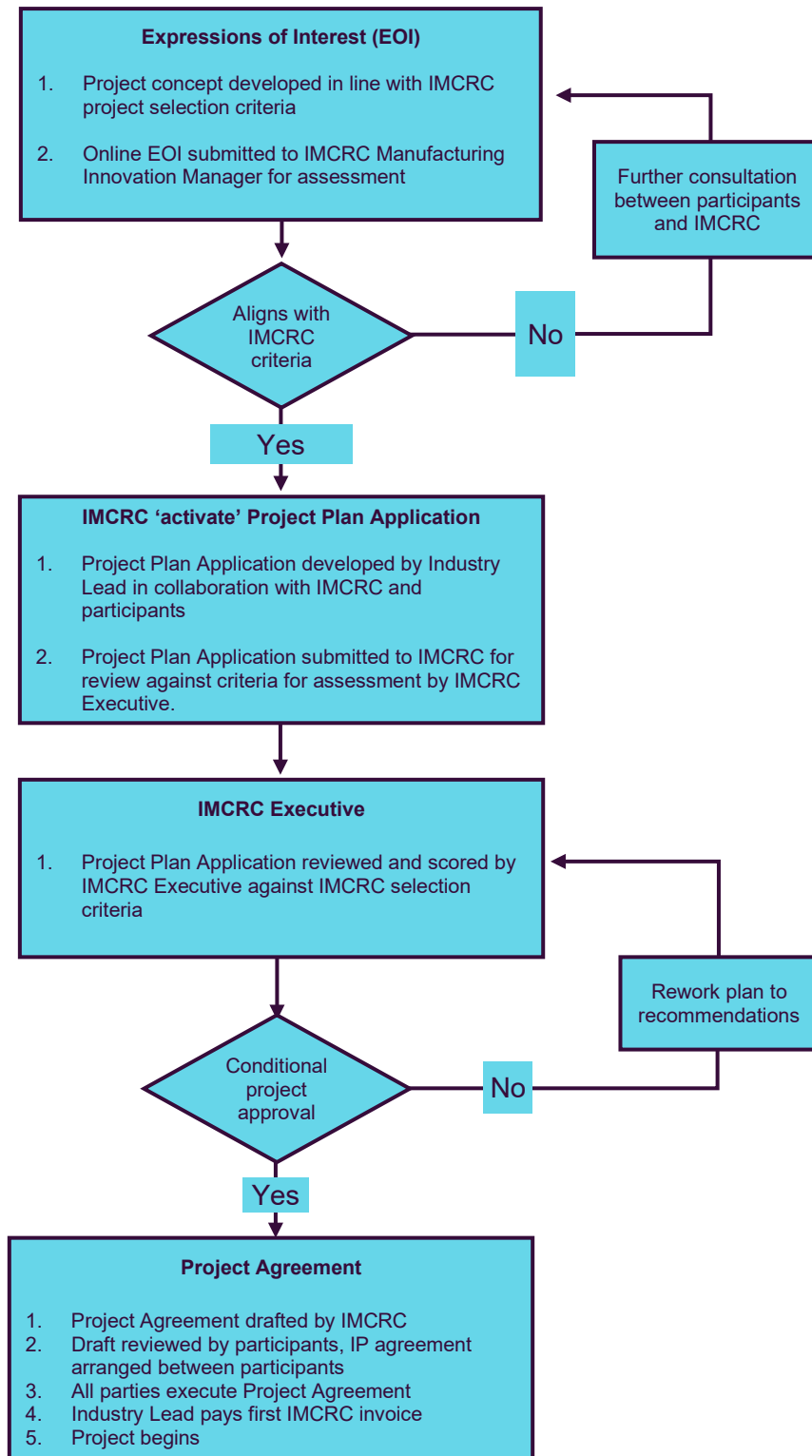
LEVEL	MRL 1	MRL 2	MRL 3	MRL 4	MRL 5	MRL 6	MRL 7	MRL 8	MRL 9	MRL 10
Phase	Technology assessment and initial proving				Technology development and pre-production		Engineering and Manufacturing development		Production and deployment	Operations and support
IMCRC Project Research focus	Not core focus level	IMCRC project research, development and Industrial Transformation focus								
Definition	Basic manufacturing implications identified	Manufacturing concepts identified	Manufacturing proof of concept developed	Capability to produce the technology in a laboratory environment.	Capability to produce prototype components in a production relevant environment.	Capability to produce a prototype system or subsystem in a production relevant environment.	Capability to produce systems, subsystems or components in a production representative environment.	Pilot line capability demonstrated. Ready to begin low rate production.	Low Rate Production demonstrated. Capability in place to begin Full Rate Production.	Full Rate Production demonstrated and lean / six sigma production practices in place.
Description, Outputs and Outcomes	Basic research expands scientific principles that may have manufacturing implications. The focus is on a high level assessment of manufacturing opportunities. The research is not confined or restricted.	Invention begins. Manufacturing science and/or concept described in application context. Identification of material and process approaches are limited to paper studies and analysis. Initial manufacturing feasibility and issues are emerging.	Conduct analytical or laboratory experiments to validate paper studies. Experimental hardware or processes have been created, but are not yet integrated or representative. Materials and/or processes have been characterized for manufacturability and availability but further evaluation and demonstration is required.	Required investments, such as manufacturing technology development identified. Processes to ensure manufacturability, producibility and quality are in place and are sufficient to produce technology demonstrators. Manufacturing risks identified for prototype build. Manufacturing cost drivers identified. IP Utilisation plan developed. Producibility assessments of design concepts have been completed. Key design performance parameters identified. Special needs identified for tooling, facilities, material handling and skills.	Manufacturing strategy refined and integrated with Risk Management Plan. Identification of enabling/critical technologies and components is complete. Prototype materials, tooling and test equipment, as well as personnel skills, have been demonstrated on components in a production relevant environment, but many manufacturing processes and procedures are still in development. Manufacturing technology development efforts initiated or ongoing. Producibility assessments of key technologies and components ongoing. Cost model based upon detailed end-to-end value stream map.	Initial manufacturing approach developed. Majority of manufacturing processes have been defined and characterized, but there are still significant engineering/design changes. Preliminary design of critical components completed. Producibility assessments of key technologies complete. Prototype materials, tooling and test equipment, as well as personnel skills have been demonstrated on subsystems/ systems in a production relevant environment. Detailed cost analysis include design trades. Cost targets allocated. Producibility considerations shape system development plans. Long lead and key supply chain elements identified.	Detailed design is underway. Material specifications are approved. Materials available to meet planned pilot line build schedule. Manufacturing processes and procedures demonstrated in a production representative environment. Detailed producibility trade studies and risk assessments underway. Cost models updated with detailed designs, rolled up to system level and tracked against targets. Unit cost reduction efforts underway. Supply chain and supplier Quality Assurance assessed. Long lead procurement plans in place. Production tooling and test equipment design and development initiated.	Detailed system design essentially complete and sufficiently stable to enter low rate production. All materials are available to meet planned low rate production schedule. Manufacturing and quality processes and procedures proven in a pilot line environment, under control and ready for low rate production. Known producibility risks pose no significant risk for low rate production. Engineering cost model driven by detailed design and validated. Supply chain established and stable.	Major system design features are stable and proven in test and evaluation. Materials are available to meet planned rate production schedules. Manufacturing processes and procedures are established and controlled to three-sigma or some other appropriate quality level to meet design key characteristic tolerances in a low rate production environment. Production risk monitoring ongoing. LRIP cost goals met, learning curve validated. Actual cost model developed for Full Rate Production environment, with impact of Continuous improvement.	This is the highest level of production readiness. Engineering/design changes are few and generally limited to quality and cost improvements. System, components or items are in rate production and meet all engineering, performance, quality and reliability requirements. All materials, manufacturing processes and procedures, inspection and test equipment are in production and controlled to six-sigma or some other appropriate quality level. Full Rate Production unit cost meets goal, and funding is sufficient for production at required rates. Lean practices well established and continuous process improvements ongoing.
Complementary Technology Readiness Level	TRL 1	TRL 2	TRL 3	TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TRL 9	
	Basic research. Principles postulated and observed but no experimental proof available.	Technology formulation. Concept and application have been formulated.	Applied research. First laboratory tests completed; proof of concept.	Small scale prototype build in laboratory environment ("rough and ready" prototype).	Large scale prototype tested in intended environment.	Prototype system tested in intended environment close to expected performance.	Demonstrated system operating in operational environment at pre-commercial scale.	First of a kind commercial system. Manufacturing issues solved.	Full commercial application, technology available for consumers.	

APPENDIX C

IMCRC 'activate' Project Preparation and Selection Processes

Applicants can initiate applications to IMCRC through two channels

1. Initial online Expression of Interest – [link here](#) – note this is not a formal application
2. Direct to a Project Plan Application (MS word template)





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